

INTERNATIONAL SEARCH REPORT

Int'l Application No
PCT/GB2004/003511

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08B37/00 C07K17/12 A61K39/385 A61K47/48

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, CHEM ABS Data, BIOSIS, EMBASE, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|---|
| X | EP 0 454 898 A (SEIKAGAKU KOGYO CO LTD) 6 November 1991 (1991-11-06) cited in the application claims 7,9 | 1,2,5-7, 10-19, 21-31 3,4,8,9, 20 |
| A | page 5, lines 22-46 ----- | |
| X | US 4 356 170 A (JENNINGS HAROLD J ET AL) 26 October 1982 (1982-10-26) cited in the application claims 1,2,4,6-8,16 | 1,2,5-7, 10-19, 21-31 3,4,8,9, 20 |
| A | column 3, lines 8-39 column 4, lines 27-44 ----- | |
| | -/- | |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

5 November 2004

Date of mailing of the international search report

12/11/2004

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

ational Application No
PCT/GB2004/003511

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|--|---|-----------------------------|
| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X | US 5 097 020 A (ANDERSON PORTER W ET AL) 17 March 1992 (1992-03-17) | 1,2,5-7, 10-19, 21-31 |
| A | column 4, lines 22-62 column 2, line 7 column 3, lines 63-65 | 3,4,8,9, 20 |
| X | SEN G ET AL: "The specificity of the binding site of AchatininH, a sialic acid-binding lectin from Achatina fulica" 1 March 1995 (1995-03-01), CARBOHYDRATE RESEARCH, ELSEVIER SCIENTIFIC PUBLISHING COMPANY, AMSTERDAM, NL, PAGE(S) 115-125 , XP004022107 ISSN: 0008-6215 | 32-34, 36-45 |
| A | *O-deacetylation of BSM on page 117* *Periodate oxidation of glycoproteins on page 117* | 35 |

INTERNATIONAL SEARCH REPORTInternational application No.
PCT/GB2004/003511**Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international Application that do not comply with the prescribed requirements to such an extent that no meaningful international Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/682004/003511

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-31

Claims 1-18

Process for producing an aldehyde derivative of a sialic acid compound in which a starting material having a sialic acid at the reducing terminal unit is subjected to:

- a)- reduction to form a vicinal diol group,
- b)- selective oxidation to oxidise the vicinal diol group formed in step a) to form an aldehyde group.

Claims 19-29

Aldehyde derivative of a di-, oligo- or polysaccharide comprising at least one sialic acid unit.

Claims 30

Composition comprising a compound according to claim 19-29 and a diluent.

Claim 31

Pharmaceutical composition comprising a compound according to claims 25 or 28 and a pharmaceutically acceptable excipient.

2. claims: 32-45

Claims 32-37

Process in which a sialic acid starting material having a terminal sialic acid unit at a non-reducing terminal end is subjected to:

- c)- selective oxidation to form an aldehyde group,
- d)- reduction to reduce the aldehyde to the corresponding alcohol.

Claims 38-43

Compound of formula II being a derivative of mono-, di-, oligo- or polysaccharide.

Claim 44

Pharmaceutical composition comprising a compound according to claim 43 and a pharmaceutically acceptable excipient.

Claim 45

Composition comprising a compound according to claims 38-43 and a diluent.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB2004/003511

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|----------------------------|---------------------|
| EP 0454898 | A | 06-11-1991 | JP 2975632 B2 | 10-11-1999 |
| | | | JP 3284698 A | 16-12-1991 |
| | | | AT 135375 T | 15-03-1996 |
| | | | AU 649416 B2 | 26-05-1994 |
| | | | AU 6450690 A | 31-10-1991 |
| | | | CA 2027447 A1 | 01-10-1991 |
| | | | DE 69025920 D1 | 18-04-1996 |
| | | | DE 69025920 T2 | 14-08-1996 |
| | | | DK 454898 T3 | 15-04-1996 |
| | | | EP 0454898 A1 | 06-11-1991 |
| | | | ES 2083989 T3 | 01-05-1996 |
| | | | FI 905003 A | 01-10-1991 |
| | | | KR 188382 B1 | 01-06-1999 |
| | | | NO 904378 A ,B, | 01-10-1991 |
| | | | US 5310881 A | 10-05-1994 |
| <hr/> | | | | |
| US 4356170 | A | 26-10-1982 | CA 1181344 A1 | 22-01-1985 |
| <hr/> | | | | |
| US 5097020 | A | 17-03-1992 | US 4673574 A | 16-06-1987 |
| | | | US 4902506 A | 20-02-1990 |
| | | | US 5360897 A | 01-11-1994 |
| | | | MX 9203151 A1 | 01-07-1992 |
| | | | US 4762713 A | 09-08-1988 |
| | | | US 4761283 A | 02-08-1988 |
| | | | AT 96676 T | 15-11-1993 |
| | | | AU 601742 B2 | 20-09-1990 |
| | | | AU 7393587 A | 01-12-1987 |
| | | | CA 1276109 C | 13-11-1990 |
| | | | DE 3787995 D1 | 09-12-1993 |
| | | | DE 3787995 T2 | 19-05-1994 |
| | | | DE 10199036 I1 | 10-01-2002 |
| | | | DE 10199037 I1 | 22-11-2001 |
| | | | DK 2588 A | 05-01-1988 |
| | | | EP 0245045 A2 | 11-11-1987 |
| | | | ES 2059372 T3 | 16-11-1994 |
| | | | HK 1003326 A1 | 23-10-1998 |
| | | | IE 60897 B1 | 24-08-1994 |
| | | | JP 2736248 B2 | 02-04-1998 |
| | | | JP 8283282 A | 29-10-1996 |
| | | | JP 2559438 B2 | 04-12-1996 |
| | | | JP 1500036 T | 12-01-1989 |
| | | | LU 90808 A9 | 25-09-2001 |
| | | | LU 90809 A9 | 25-09-2001 |
| | | | NL 300051 I1 | 01-10-2001 |
| | | | NL 300052 I1 | 01-10-2001 |
| | | | WO 8706838 A1 | 19-11-1987 |